

1 We claim:

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3 1) A method of operating a server to provide immediate and deferred response

4 services to remote clients, the method including:

5 a) providing dedicated server-side storage areas for client archives;

6 b) implementing database management policies, said policies being

7 configurable to each client archive;

8 c) implementing fully automated communications with the client for data

9 synchronization and client request submission;

10 d) during the automated communications, dynamically executing downloads

11 based on data synchronization needs, any outstanding deferred responses

12 from requests received previously, and any immediately serviceable

13 responses from current requests; and

14 e) following the receipt of client uploads, selectively performing server-side

15 processing based on the client archive specific database management

16 policy and any client requests requiring deferred responses.

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18 2) The method of claim 1, wherein the services are explicitly customer-account based.

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20 3) The method of claim 1, wherein the database management policies include image

21 management policies and the image management policies include methods of

22 image synchronization.

4) A method of operating a client device and an archive server, the method including:

- a) performing intermittent automated communications from the client to the archive server for image sync and request submission; and
- b) performing intervals of client operation without communications with the server, said client operation in intervals without communications including
 - i. performing selective display of locally held images;
 - ii. buffering images and requests received locally since previously having communications with the archive server, wherein said requests include requests to reconfigure image management policies of the server/client combination; and
 - iii. indefinitely deferring communications of the buffered images and requests.

1 5) A method for hiding from the user the process of archiving binary files to a remote
2 server (including hiding the latencies of establishing a connection, account
3 login, and slow modem transfer speeds, and including hiding the processes of
4 enabling, supervising, and terminating the transfer), by quickly automatically
5 transferring files from removable media, indefinitely holding the files in a
6 buffer, and automatically transferring the data to a remote server in accordance
7 with a predefined user profile.

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9 6) A method (“order and forget”) of requesting services that unburdens the user from
10 supervising the submission of the request for services (including hiding the
11 latencies of establishing a connection, account login, and slow modem transfer
12 speeds, and hiding the processes of enabling, supervising, and terminating the
13 transfer).

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15 7) A method of communicating images from a user-camera to a user-controlled
16 archive using an intermediate storage device, wherein the user-camera-to-
17 intermediate device operation is decoupled from and is generally
18 asynchronous with the intermediate-device-to-archive operation, the latter
19 occurring automatically after a variable delay following the former.

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21 8) The method of claim 7, wherein the intermediate storage device is local to the user
22 and the archive is remotely accessed via a network.

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24 9) The method of claim 7, wherein the network is the internet.

1 10) A method of automatic processing of remote services associated with digital
2 photos, the method including:
3 a) accepting and buffering a user request on a client platform;
4 b) waiting a dynamically determined interval until a predetermined set of criteria
5 are satisfied; and
6 c) communication of the request and the associated digital photos from the client
7 to a server, routing the request to a service provider, execution of the request,
8 return routing of the result/response, and receipt of the result/response by the
9 client.

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11 11) The method of claim 10, wherein the predetermined set of criteria includes that a
12 request is pending and the current time is within a previously programmed
13 time window.

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15 12) The method of claim 1, further wherein the server acts in response to client
16 requests as a single consolidated storage destination for multiple image
17 sources other than the client, including:
18 a) scanned images from new film developing;
19 b) scanned images from conversion of existing prints;
20 c) digital images provided by others via the internet; and
21 d) image library services accessible via the internet.

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23 13) The method of claim 1, further wherein communications to the client image
24 archive are additionally available via real-time web-browser access.

1 14) The method of claim 1, wherein the server supports simultaneous access by
2 multiple customers to respective image archives, some customers using
3 attended access via browsers and that require immediate-responses and other
4 customers using unattended access via client devices that permit deferred-
5 responses.

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1 15) A method of operating a server, the method comprising:

- 2 a) reserving dedicated server-side image storage areas corresponding to each
- 3 of a plurality of intermittently-connected client devices having client-
- 4 side image storage areas, each dedicated server-side image storage area
- 5 including at least one image storage area reserved for long-term image
- 6 storage;
- 7 b) maintaining client-associated data, including storage management policy
- 8 data;
- 9 c) performing automated user-unattended communications with the client
- 10 device that have no requirement for the downloading of real-time user-
- 11 interface related data (e.g. HTML);
- 12 d) during the user-unattended communications, uploading image data
- 13 selectively provided by the client device;
- 14 e) during the user-unattended communications, uploading request data
- 15 selectively provided by the client device;
- 16 f) during the user-unattended communications, selectively downloading
- 17 images to the client device as a function of the client-associated data
- 18 and the selectively uploaded client request data; and
- 19 g) subsequent to an instance of the user-unattended communications during
- 20 which data is uploaded, selectively processing the uploaded data as a
- 21 function of the client-associated data and the selectively uploaded
- 22 client request data.

16) The method of claim 15, wherein the clients are associated with customer accounts and client activities result in account billing.

17) The method of claim 1, but further wherein the database management policy acts to:

- a) attempt to keep the client-side storage as a strict subset of the server-side (archive) storage;
- b) discard the oldest created images in the client-side storage, as required to accommodate new images;
- c) discard the least recently accessed images in the client-side storage, as required to accommodate new images;
- d) lock user selected images in the client-side storage;
- e) provide restoration of the contents of the client-side storage in the event of a loss; and
- f) maintain screen resolution copies in the client-side storage and printer resolution copies in the server-side storage.

18) The method of claim 1, but further wherein at least some of the client requests for image processing services are executed directly by the server.

19) The method of claim 1, but further wherein the server communicates at least one image in the archive to a specialty organization for request execution.

20) The method of claim 1, but further wherein the execution of at least some of the requests requires the generation and delivery of physical materials.

- 21) The method of claim 4, but further wherein the client device is completely integrated into a single portable handheld device.
- 22) The method of claim 4, but further wherein the client device has a wireless handheld portion and an associated base-station portion, wherein the display and user interface are in the handheld portion and the base-station has client-side image store and the circuitry to communicate with the server.
- 23) The method of claim 4, but further wherein the general appearance of the user-interface is determined by page descriptions stored in non-volatile memory in the client that are modified as required by dynamic data conditions in the client and the most recent downloads from the server.
- 24) The method of claim 4, but further wherein the client has a first non-volatile storage area dedicated to photos and a second non-volatile storage area dedicated to the user interface.
- 25) The method of claim 24, wherein the photo storage area is maintained on revolving media, while the user interface is maintained in flash memory.
- 26) The method of claim 24, wherein the first and second storage areas are maintained in flash memories having separate write controls.

1 27) The method of claim 4, but further wherein the client device acts as a posted-write
2 buffer to receive the locally received images and let the source of the images
3 be put back to use before the images reach their ultimate destination.
4
5 28) The method of claim 4, but further wherein the client device receives the locally
6 received images via a removable memory.
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8 29) The method of claim 28, but further wherein the images are loaded automatically
9 as soon as the removable memory is inserted.
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11 30) The method of claim 4, but further wherein the client device receives the locally
12 received images via an I/O connector.
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14 31) The method of claim 30, but further wherein the images are loaded automatically
15 as soon as the I/O connection is sensed as being active.